EDITORIAL

. . . a pretense of prevention — a past tense of "sorry"

We call your attention to a recent study of anesthetic mortality.[1] In a paper read at the 39th Congress of the International Anesthesia Research Society, factors in geriatric anesthesia mortality were presented.

Our expanding population results from not only a greater number of babies being born and a significantly reduced infant mortality, but also a greater number of citizens living longer. In fact, longevity in the past 50 years has doubled — a result of better control of infectious diseases, nutrition, sanitation and public health programs.

We are faced with the task of treating more and more dental patients in the older age categories. Many programs are now in progress gathering more information about our geriatric population. In the study cited, it was found that the highest operative and anesthetic mortality occurred in patients 65 years of age or older. Deaths per 10,000 operations *averaged 3.8 for all* ages while the rate for those patients over 64 years of age was 16.1!

Anesthesia was considered to have played a role in 115 of the 651 operative deaths occurring in the older age group. Of these, 29 were ascribed directly as anesthetic deaths, while in 86 cases, it was judged to have been one of several contributing factors.

In deducing some of the important factors involved in this study, it is seen that only 28.7% were in good or fair preoperative condition, while 71.3% were classified as poor or critical. Although operations involving the gastrointestinal tract rated a majority of the operative mortalities, a goodly number of deaths occurred in patients operated on for head and neck procedures (6.1%), extremity procedures (6.9%), and ear, nose and throat surgery (2.6%).

In an attempt to pinpoint the phase of management "at Fault" in these anesthetic fatalities, the investigators ascribed 73% of the cases to improper management of the anesthetic and faulty postoperative management or medication. The majority of deaths were from cardiovascular causes, however, the *two leading specific causes of death were aspiration of vomitus and hypoventilation secondary to neuromuscular blockade.*

Deaths occurred in association with all commonly used agents with six patients dying from overdosage of local anesthetics. For 88 patients receiving intravenous and inhalation agents, death was ascribed to nitrous oxide in 28; to Cyclopropane in 21 patients; to Fluothane in 16 patients; to intravenous barbiturates in 10 patients; and to Ether in 10 patients.

There is little doubt that patients of the geriatric age group present a high risk, with males carrying an even higher anesthetic mortality rate than females. Some of the causes of these catastrophes would certainly seem to be preventable with greater awareness of the hazards pertinent to this age group. Repeatedly it is pointed out as it was in this study,[1] that aspiration of vomitus is the most common primary factor in anesthetic mortality. In a recent article,[2] Dr. Leroy Vandam, of Boston, suggests that in the majority of cases the material aspirated is liquid, and is at a pH below 2.5. Such acid introduced into the tracheobronchial tree produces a severe reaction which involves a closure of the airway due to spasm with subsequent cyanosis, tachypnea and dyspnea. Hypotension and circulatory collapse may follow. Pulmonary edema develops to further compromise respiratory exchange.

Immediate treatment with corticosteroids via local instillation and parenteral administration is said to reduce the intense inflammatory reaction that follows this destructive process. Oxygen is administered to minimize the anoxia and bronchospasm may require antihistamines, aminophylline or atropine.

Considerations for the prevention of vomiting and aspiration are particularly pertinent for ambulatory anesthesia, because of the limited control the doctor can exercise over previous food and fluid intake and the factors which affect gastric emptying. We must be particularly vigilant and prepared for this hazard in all patients. Inadequate preoperative preparation should be an ironclad contraindication to anesthesia. While the mortality rate from a toothache is nil, patients given general anesthesia who vomit are fairly common and the likelihood of aspiration of vomitus is a significant one. It is far better to defer the anesthetic until the patient can be better prepared by an adequate period of fasting prior to the appointment for surgery.

Dr. Vandam comments that emptying the stomach by means of gastric tube may incite the very vomiting that was feared and that complete emptying can never be assured. Other techniques which are employed carry their own intrinsic hazards and problems. He concludes with "suspicion that vomiting may occur" and lead to a tragic chain of complications, "will go a long way toward prevention" of this catastrophe.

REFERENCES

1. Rashad, K. F., Goldman, E. J., Graff, T. D., Benson, D. W. and Kelley, E. B., Baltimore Anesthesia Study Committee: Factors in Geriatric Anesthesia Mortality, *Anes. & Anal.* 44:4, July-August 1965.
2. Vandam, L. D., Aspiration of Gastric Contents in the Operative Period, Current Concepts, *New Eng. J. Med.* 273:22, 1206-1208, 1965.